noticed the trichina, which was no doubt one of the causes that led Moses to declare the pig to be unclean; and in the hundred tapeworms he had examined, from our fellow citizens, during the past twenty five years, he had ascertained that they had all been derived from rare beef. He continued, in a visit to Charleston, S. C. before the late war, at an evening entertainment among other viands, were nicely browned slices of the drum-fish, *Pogonias chromis*. A friend informed him that some portions were more gelatinous and delicate than others and helped him to what was supposed to be one of such. On cutting into it he had observed imbedded in the flesh a soft mass which appeared of enigmatic character. The following day he procured from market a drum-fish on the dissection of which, he found imbedded in the tail several egg-shaped masses, about three inches long and less than an inch thick, which proved to be a large coiled worm, (*Acanthorhynchus reptans*).[1] This it was that gave delicacy to the dainty, and in this instance the parasite seems to enhance the excellence of the food. At another evening entertainment nearer home he partook of some stewed terrapins. Taking into his mouth what appeared to be an egg it produced such an impression as led to its rejection. Seeming so peculiar he tied it in the corner of his handkerchief for more convenient examination. The specimen, now exhibited, was a membranous bag which contained thirty yellowish white maggots from 8 to 12 mm long by 1.5 to 3 mm broad. They are the larvae of a bot-fly, and resemble those of the *Gastrophilus* of the horse. Their characters are as follow:—

Body of the larva fusiform, acute anteriorly, obtuse posteriorly, consisting of twelve segments including the head, which is armed with a pair of strong, black, hooked maxillae; terminal segment with a pair of trilateral oval, chitinous disks, each with three spiracles; intermediate segments with numerous minute recurved hooklets, disposed in incompletely separated bands at the fore and back part of the segments.

The sac containing the larvae is about three fourths of an inch long and half an inch broad, with a short tubular prolongation open at the extremity. It was uncertain whether the sac formed part of the intestine.

The dish of stewed terrapins was suspected to have been a mixture of the diamond-back, *Emys palustris* and the red-bellied terrapin *E. rugosa*. This is not the only instance of the occurrence of bots in turtles, as Prof. A. S. Packard notes the case of larvae being found in the skin of the neck of the box-turtle, *Cistudo carolina*.[2]

DECEMBER 20.

Mr. Geo. W. TRYON Jr. in the chair.

Twelve persons present.

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[1] Proc. A. N. S. 1858, 111.

[2] American Naturalist, 1882, 598.

A paper entitled "The Miocene Mollusca of the State of New Jersey," by Angelo Heilprin, was presented for publication.

Determination of the Age of Rock Deposits.—Prof Heilprin, referring to the methods that had been used by geologists and physicists to determine the rate of formation of rock masses, stated that in the case of the organically-formed rocks, especially those, like the chalk, which were largely in the nature of a deep-sea deposit, the data deduced from sedimentation and accumulation were of little or no value, since the rate of growth here was almost wholly dependent upon the rate of development of the oceanic organisms which use lime in the construction of their hard parts. In the deposit now accumulating along the sea-bottom, known as the Atlantic or Globigerina ooze, the speaker thought we had some direct clue bearing upon the solution of the problem. Manifestly, there can be no more rapid accumulation of the calcareous ooze than there is lime-carbonate suspended in the sea; and again, the quantity of lime-carbonate (in the form of microscopic tests and fragments) suspended in the sea must depend upon the quantity of the formative material contained in the sea—the quantity of lime carried in by the rivers. The researches of the officers of the Challenger expedition have shown that in a column of oceanic water of 600 feet depth, with a transverse area of one square mile, there are contained some 16 tons of suspended organic (foraminiferal) particles; these, if precipitated to the floor of the sea, would make a deposit $\frac{1}{10000}$ inch in thickness. Now, it would seem from careful observations made on many of the most important rivers of the globe[1] that the quantity of lime carried out by them into the sea annually is about one-sixth that of their suspended sediment, and would cover the sea-bottom, if precipitated at a rate proportional to that of the removal of continental sediment, one foot in 3000 years—to a depth of about $\frac{1}{4500}$ inch. Assuming that one-half of this amount is used by the Foraminifera for the construction of their shells, the rest being taken up by the mollusks, corals, etc., then the foraminiferal accumulation from this (apparently the only) available source would be the $\frac{1}{9000}$ part of an inch annually, or very nearly the amount that would accumulate from the droppings contained in the 600-foot column of water, as deduced from the Challenger determinations. At this extremely slow rate of accumulation, it would require a period of 100000 years to form a single foot, and where, as in the case of the Chalk, we have a similar deposit hundreds of feet in thickness, we would require a period of millions of years for its formation. The speaker stated that there were probably factors involved in a more rapid formation of the Atlantic ooze with which we were not acquainted, and it hardly appeared credible to him that the rate of formation could be as slow as the data indicate. But the method of calculation was based upon tangible facts, and was accordingly interesting.

[1] Mellard Reade, Presidential Address, Liverpool Geol. Soc., Oct. 1876.